

ARCHITECTURE

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THE SCHOOL OF ARCHITECTURE COLUMBIA UNIVERSITY NEW YORK, N. Y.

Offers special opportunities to draughtsmen for advanced professional training. For Announcement and other information apply to the Secretary of the University.

PROFESSIONAL COMMENT.

THE Trustees of Columbia University at their June meeting appointed a committee to arrange the specific measures to be taken for putting into execution the resolution of the University Council in favor of the immediate constitution of a Fire Arts Faculty. This action, in connection with the previous action of the Trustees of the University and of the National Academy of Fine Arts, providing for an affiliation and organized co-operation of the two bodies (not a consolidation, as erroneously imagined by many), assures the speedy establishment of a great School of Fine Arts, on the broadest and most generous lines, worthy of both the co-operating institutions and of the metropolis. The beginning will be quiet and modest, no doubt; but the plans laid for it are liberal and far-seeing, and contemplate the most favorable possible combination of both methods and kinds of art-instruction, hitherto too often kept widely apart, that of the lecture room and that of the studio.

WE note that the English illustrated papers, like their German contemporaries, are reflecting the Renaissance in industrial art by establishing departments devoted to designs of this character. The extent to which the German movement is being carried is illustrated in a magazine from the Fatherland where designs are shown of a Noah's Ark designed by some of the best men in Germany.

THE designers of the roof garden on the Astor Hotel are to be congratulated. They have evolved the first structure of this sort which does not seem like a temporary make-shift. The scheme of pergola, fountain and sculpture obtained is one that thoroughly hides the effect usually connected with the roof of a skyscraper. It is distinctly a scene painter's design, by whom the work was actually done, but notwithstanding this, it has a realness with which the scene painter's art is not usually associated.

THE most important step ever taken by the City of New York passed almost unnoticed a few weeks ago, when on July 18th the Board of Estimate and Apportionment gave the City's consent to the building of four new rapid transit routes on the Island of Manhattan, and the adoption of a tunnel plan by means of which the residents of Queens and Kings are to be landed in the heart of the dry-goods and amusement district. By the vote of that Board to which so little attention has been paid, the first step was taken by which the city gave its consent to the construction of a work which will cost at least two hundred million dollars, and give employment to forty to fifty thousand men, and which in turn must have a tremendous influence upon the building interests of the city in all its boroughs.

WE have before us an advance copy of the Year Book of Columbia University School of Architecture, 1904-1905, published by the Architectural Society. It is appropriately dedicated to "Mr. Charles Follen McKim in grateful recognition of his liberal support of, and active interest in, the Columbia School of Architecture." This annual publication has more than a passing interest, and serves its purpose in calling attention to the excellent results obtained through the instruction of Columbia. It is a most creditable book, printed on high grade paper and attractively bound, due to the efforts of the publishing committee, of which Mr. Angus S. MacDonald is Chairman.

THE one million dollar endowment fund for the American Academy of Fine Arts in Rome is almost reached. The recent gift of one hundred thousand dollars from the University of Chicago brings the fund up to the eight hundred thousand dollar mark, and Director Burnham states that the remaining two hundred thousand will soon be added by the University of California and the Art Institute of Chicago. According to the plans of the officials, the buildings now occupied by the Academy are to be considerably improved and the scope of the work broadened materially.

THE fact that a well-known decorative firm recently took the commission to act as architects for one of the new residences of our multi-millionaires does not seem to have interfered with the disposition on the part of this firm to continue to solicit business among its architectural competitors. Several of the large construction companies which a few years ago were in the habit of attempting to secure contracts including the architectural service have found that it so thoroughly interfered with their efforts in the architects' offices that they now lay stress upon the fact that they do not do architectural work in such a manner as to be considered architects. Their method is somewhat different now, but it amounts to the same thing, and this method offers a tempting opportunity to the practitioner who is anxious to shirk his work by the construction company's willingness to take the job from the merest pencil sketches, and to work up the drawings entirely at their own expense under the supervision of the architect. These companies naturally take big chances in taking work with this incomplete data, but if by so doing they can avoid the low prices due to the competitive bids they feel that they are well repaid; and unfortunately they are able to find a number of architects who are willing to have the construction companies do the work while they still collect five per cent. from the client.

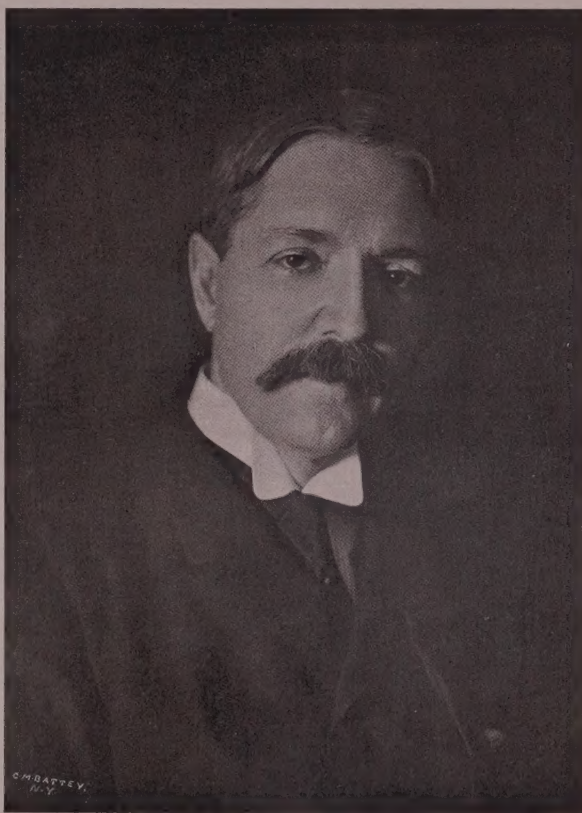
THE study of architecture occasionally leads its followers into some peculiar fields. Mr. W. E. C. Nazro, who was graduated from Harvard in 1897 with the degree of B. A. S. in landscape architecture, has recently started for Panama, where he is to have charge of the "Welfare Work" during the construction of the Canal. The most important problem which the government has to solve in the digging of the big ditch is to keep the force of men strong and healthy, and with this end in view Mr. Nazro and his assistants will thoroughly investigate the needs of the employees,

and will make recommendations as to plans for recreation, out-door sports, amusement halls and club houses. Since graduating from the University Mr. Nazro has made a special study of buildings of this type, and a few years later took his degree in architecture, and after leaving college he traveled extensively in Europe for the special purpose of studying buildings of this character.

THE work of architects in the field of industrial design has been an important factor in making modern advertising a fine art, and in order to emphasize the fact that advertising is an art, a number of successful men in this line have organized an advertising exhibition which is to be held in the Coliseum in Chicago in October of this year. Naturally the business side of advertising will be given equal importance with its artistic features, but we note in the series

of lectures to be delivered during the course of the exhibition that two at least will consider the artistic side; the first one being on "The Value of Art in Advertising," and the sixth on "Out Door Signs." Modern advertising is a "condition and not a theory." The architect might as well face the situation boldly, and if some general understanding could be reached between the advertising man and the architect as to the proper function of the out-door sign, it would go a long way towards improving the artistic condition of the modern city.

One of the most successful out-door signs that we know of is on a roof of a large department store on the East side of New York. Among its many departments this store includes a green house which is perched high on the roof overlooking two prominent avenues, and on the blank wall of this store some genius has painted an Italian garden which runs into the actual construction on the roof of the building in such a way that the green houses seem to be set in a mass of foliage and statuary.



Architects of To-Day.

MR. GEORGE A. FREEMAN, NEW YORK.

A SUIT brought by a druggist on Union Square, New York to secure damages for injury to his property during the construction of the subway has been decided by Judge McCall of the Supreme Court in favor of the defendant, the court holding that the defendant exercised proper judgment, caution and diligence in performing the work during the construction of the subway. Rock was encountered in front of the plaintiff's premises and was excavated right up to his house line, and exit from his store was only possible through a narrow platform constructed by the contractor. The storekeeper was practically put out of business for several months through causes over which he had no control, and for which he was in no wise responsible. In our ordinary building

practice we have always considered that under such circumstances the aggrieved party was entitled to damages from the contractor or owner responsible for the excavation.

AN Australian inventor is putting on the market a window which operates without pivots, hinges, cords or weights, and which revolves and "stays put" at any angle, and at the same time gives the maximum amount of ventilation by providing an opening of the same proportions as can now be obtained with the ordinary double hung window. On account of the absence of cords and weights the narrowest kind of a mullion is permissible, and its use would undoubtedly enable the designer to get over many difficulties of fenestration which now seem insurmountable.

THE coming of the brick-laying machine has been announced again and again, but the machine has never materialized. The last number of the "American Contractor" claims that an inventor in Williston, North Carolina, has perfected a machine which will do this seemingly impossible thing. The machine in question is said to lay brick with all the skill of the accomplished brick-layer with perfect accuracy and with the rapidity that discounts the human hands. It is further stated that two or three men operating the machine, and supplying it with bricks and mortar will do the work of a dozen brick-layers in the course of a day, and not only does it accomplish all this, but it can be easily and almost instantly regulated to skip spaces designed for openings for doors and windows, performing this task with the greatest accuracy. Our contemporary fails to explain how this machine will get a "Union card," and we therefore imagine that we will have to wait a few years until the machines are organized before they can be put to practical use.

AN architect remarked to a lady that he had been to see the great nave in the new church. The lady replied, "Don't mention names—I know the man to whom you refer!"

MR. A. NEEDHAM WILSON, A. R. I. B. A.

I FEEL our American brethren are considerably ahead of us in matters of draughtsmanship, in spite of their French training, and they have struck out on vigorous lines characteristic of their nation. I have looked through some of the illustrated catalogues of their architectural exhibitions, and I confess to a little feeling of chagrin that our representatives make a comparatively poor show in matters of draughtsmanship. I may be wrong, and probably am, and you must please take my opinion for what it is worth. But if we are behind at all it will not be for long, for, having decided to change our conservative methods, we develop rapidly. Only let us beware that we do not rush into the opposite extreme."

ESSENTIALS AND COSTS OF A MODERN JEWELRY STORE—THE TIFFANY BUILDING.

By HENRY OLNSTED, JR.

IT is evident that Architects and Capitalists are awakening to the splendid returns obtained from building construction embodying the best skill and materials money can purchase. A notable example is to be found in the new Tiffany Building on the corner of Fifth Avenue and Thirty-seventh Street, New York.

The problem of the Architects, Messrs. McKim, Mead and White, was to design a retail store and light manufacturing building of white marble, combining every modern safeguard against fire and

burglary, and meeting thoroughly in dignity, simplicity and refinement the age and high reputation of its owners and sole occupants, the Tiffany Company. The building was erected by Mr. Charles T. Wills, builder, which is a guarantee of the very best work.

Restricted financially, merely to the limits of business prudence, the Architects produced a design, illustrated in this issue, which will go down in the history of construction work in this city as one of the finest, costliest and most modern of store buildings in America.

When one reflects that our country has more millionaires than any other country on the globe, it is a matter of no small wonder that a greater outlet for such vast wealth has not long ere this centered in such excellent investments as this building will prove to be.

The purpose of the building is a retail store and show room with space devoted to light manufacturing and storage of valuables. The impression upon entering the building is one of elegance, dignity and spaciousness together with unsurpassed ventilation and light. Closer examination reveals the care and excellent judgment used to provide every modern safeguard against fire, theft and loss even of dust and sweepings containing filings and particles of precious metals, etc.

The following facts will prove of value to the architectural profession, as they are illustrative of the desirable goal to be obtained in all architectural and building construction work, namely that we cannot exercise too high a grade of skill in design and specification, nor use too costly materials, for by use of such alone can we maintain superiority in building in this country. That the best is never too good and the costliest never too dear should be borne in mind by all Americans.

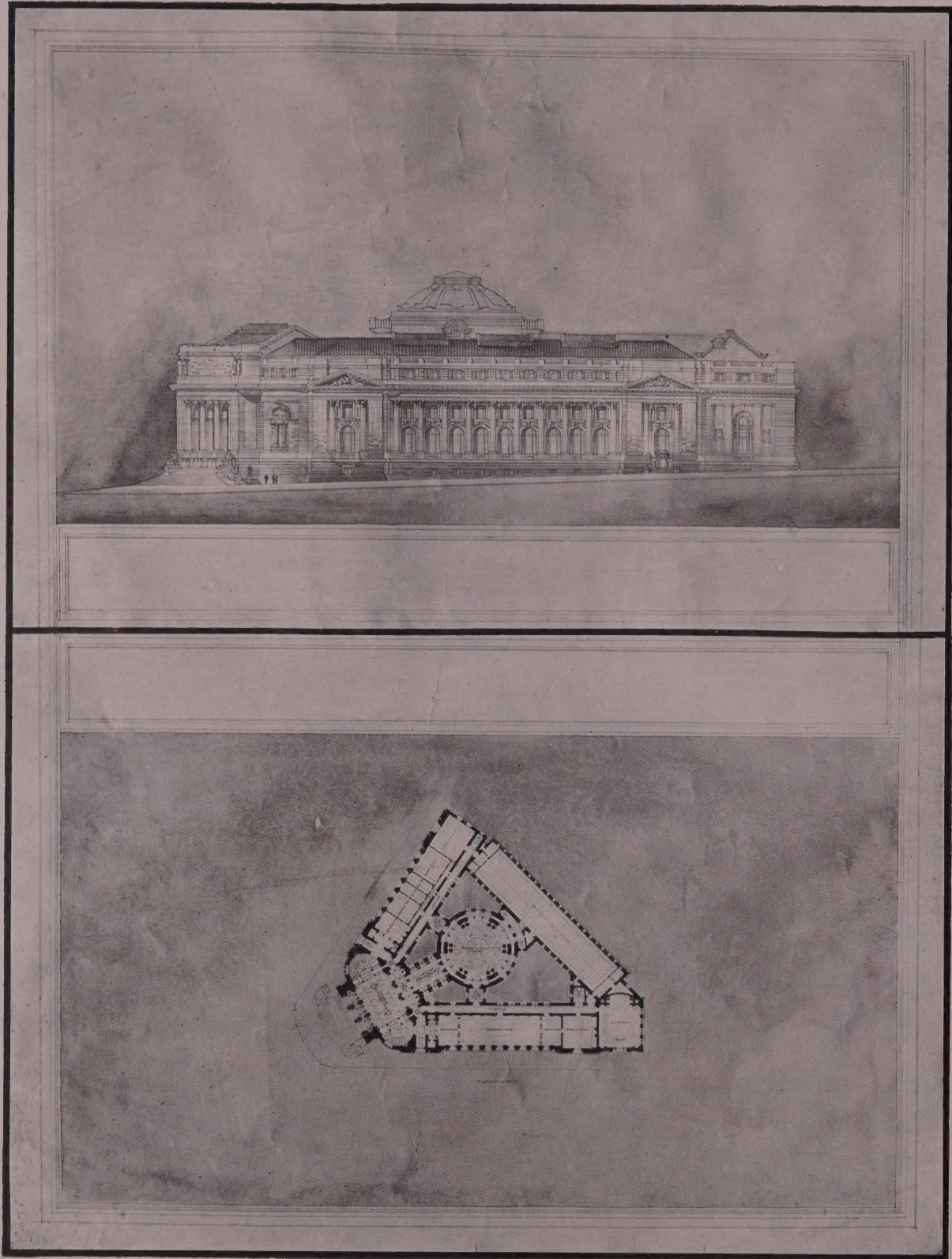
The size of the building plot is 117' front by 152' deep, or a total of 17784 square feet. It is a seven-story building, 140 feet high, and cost several million dollars. Total number of cubic feet in building is 2,615,000. Each floor approximates 17000 square feet.

Attention should be called to a number of the specific items which make largely for the success and desirability of the building as a whole.

Approaching the structure one sees a white Italian marble exterior, whose lines may be called almost severe in their simplicity, yet relieved of any stiffness through the exquisite grace of proportion and color effect. An excellent effect in contrast to the pure white of the exterior is produced by the rich green copper of the window frames installed by the Tiffany studios. In windows of the upper stories clear plate Mississippi wire glass has been used as a fire retardant, but its use cannot be detected from the street, nor scarcely be noticed from the inside, demonstrating further its value not only as a fire retardant, but as a material without objectionable feature from an architectural standpoint.

Entering the store floor, practically on a level with the street, a first impression is one of roominess and refinement produced by the height of ceiling and quiet richness of materials and color scheme. The coloring throughout is of a steel or silver gray tone, not only on ceiling, walls, counters, showcases, etc., but including the huge gray marble columns constructed of four pieces hollowed to surround the steel columns of the structural work. As a whole the store harmonizes beautifully and with restiveness to the eye. The electric fixtures, showcases and elevator grill, as well as the decorations, installed by the Tiffany Studios, all bear out this same gray

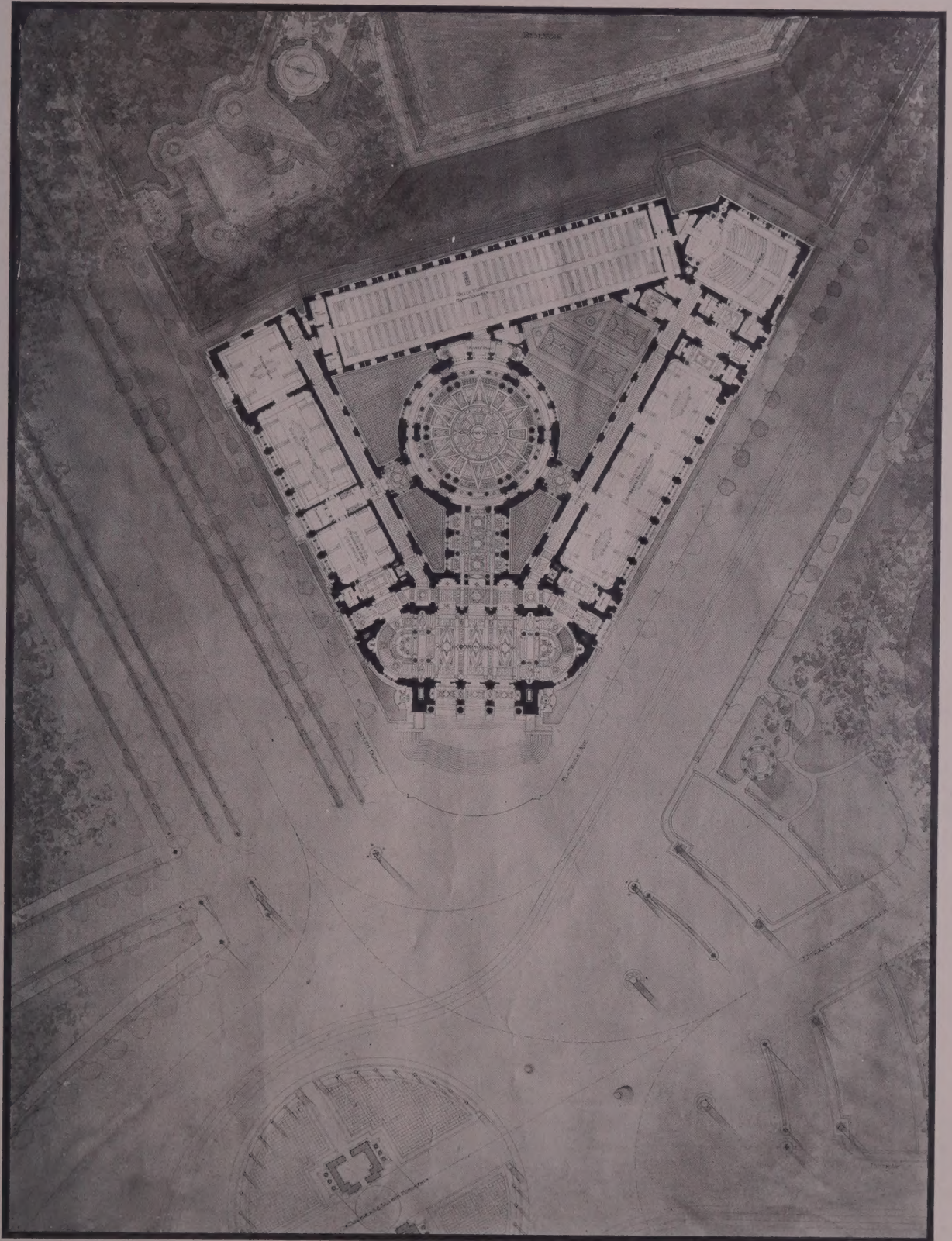
(Continued page 126)



McKIM FELLOWSHIP, COLUMBIA UNIVERSITY.

Won by Lucien E. Smith.

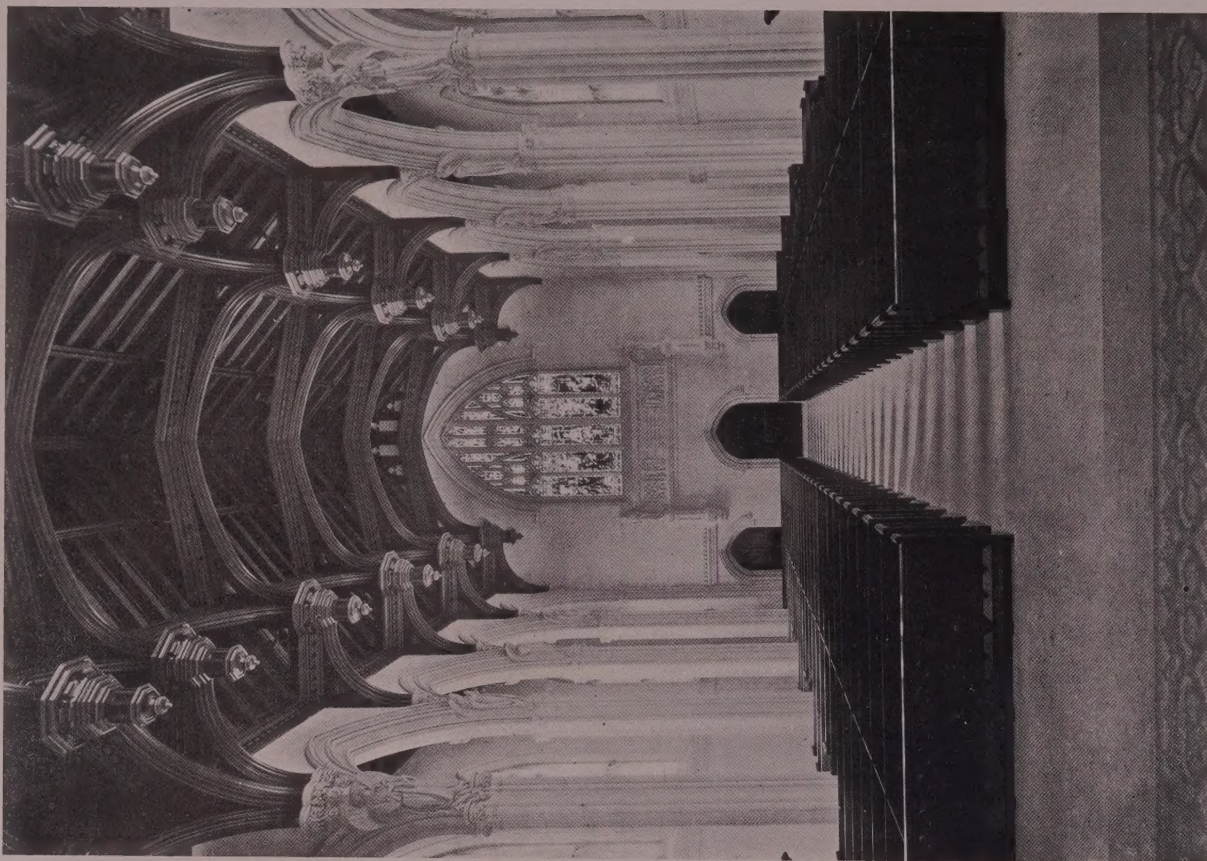
Elevation and Second Story Plan, A Library Building for Brooklyn at Entrance of Prospect Park.



MCKIM FELLOWSHIP, COLUMBIA UNIVERSITY.

Won by Lucien E. Smith.

Ground Plan, A Library Building for Brooklyn at Entrance of Prospect Park.



Allen & Collins, Architects.

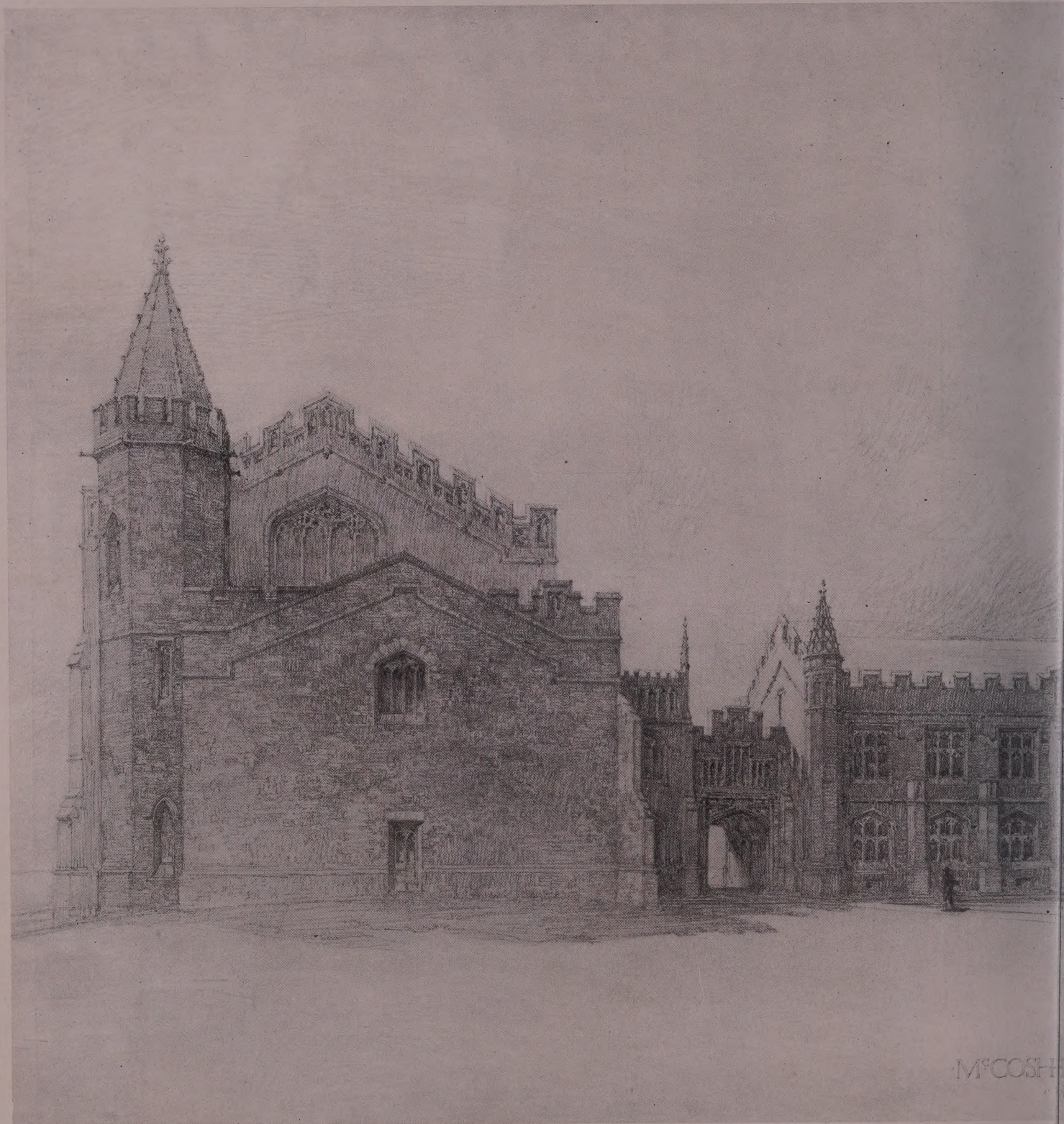


THE THOMPSON MEMORIAL CHAPEL, WILLIAMSTOWN, MASS.



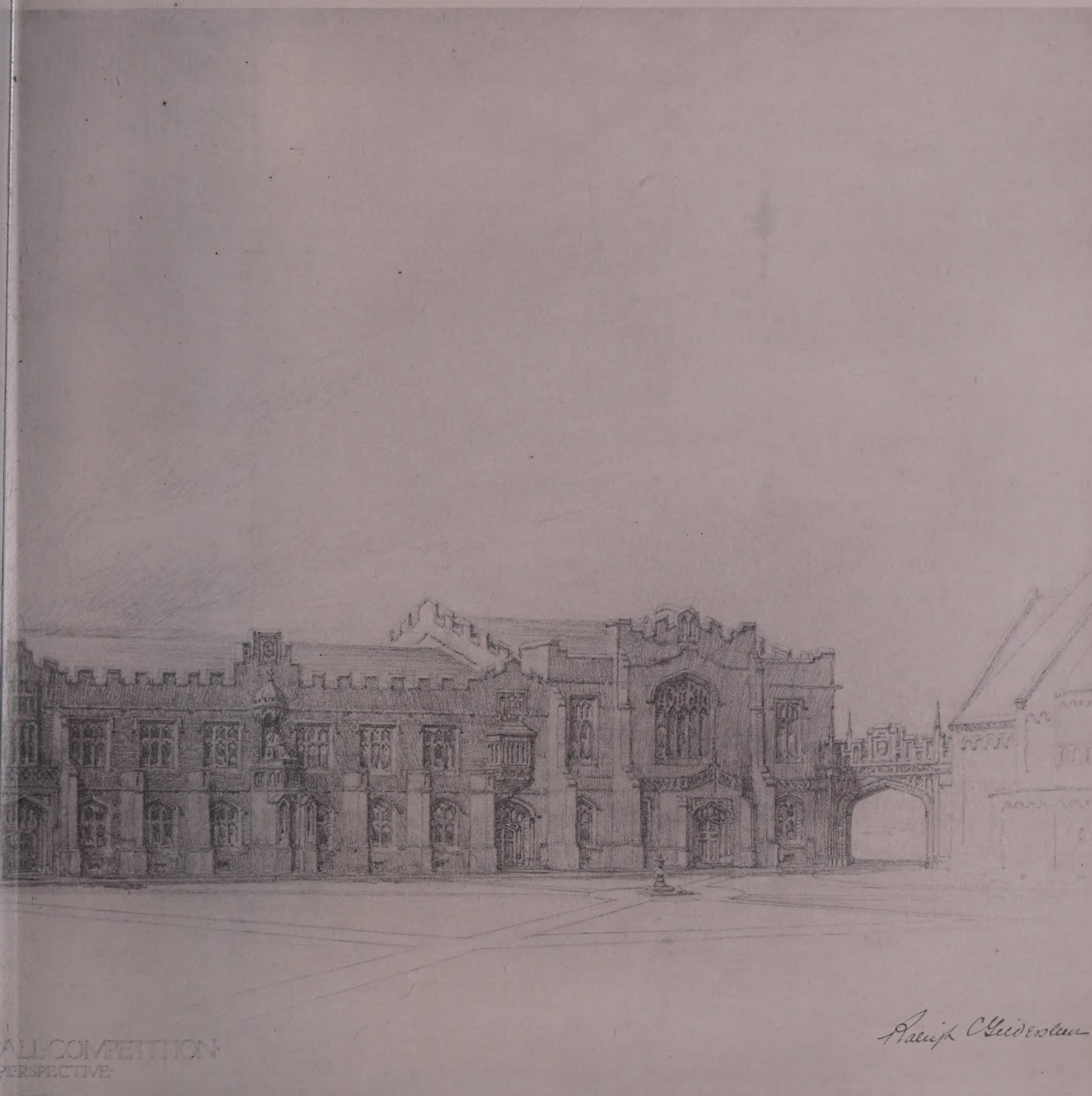
THE THOMPSON MEMORIAL CHAPEL, WILLIAMSTOWN, MASS.

Allen & Collins, Architects.



McCOSH

ACCEPTED DESIGN, McCOSH HALL, PRINCETON.



(Continued from page 119)

coloring. That Mr. Louis C. Tiffany, has succeeded in creating a new and beautiful effect is apparent at a glance. Specially noteworthy features of his work lie in the extensive use of teak wood and steel, with an inlay of brass for all counters and showcases. This feature, together with the inlay of brass in the steel elevator enclosures and steel door work, is new in this class of craftsmanship in commercial buildings. All window frames fronting upon both streets are of solid copper, using no wood whatever, and make largely for reduction of fire insurance cost and for durability.

To reduce fire risk to a minimum the least possible quantity of wood has been used, and where used consists of ash, oak, mahogany and teak wood of finest grades. Some mahogany panel work in the executive offices measures 6 feet by $21\frac{1}{2}$ feet without apparent seam or joint, and has the appearance of one solid piece of wood. The store floor, with a surface of 13000 square feet, is of veneered teak wood; the teak specially imported from Burmah, India, in the log, sawed and prepared in this country. Three months were consumed in making it ready to lay. The boards are 13 to 20 inches in width by 12 to 20 feet in length. They consist of three pieces; a base of ash upon which is glued oak, and to this is glued the teak finish, the whole comprising $1\frac{3}{4}$ inches thickness. While the cost is above that of ordinary flooring, its greater value lies in the fact that it will never wear out nor display any of the weaknesses of any other type of flooring. The oak part of this specially manufactured flooring has tongue and groove. The entire finished woodwork was installed by Messrs. J. C. Hoe's Sons.

The ceilings of the underground floors and top floor are of clay tiling, known as the Guastavino ceiling arch system. This work, with its delicate coloring and wide raised jointing, lends itself with beauty and strength to the general scheme of decoration. The tiles are 6x12 inches in size, and embedded in plaster with a quarter inch joint raised an eighth of an inch, and from a distance might be said to present the appearance of a great white netting supporting the ceiling arches. Over 9000 square feet of this work has been installed.

The value, from an architectural and commercial standpoint, of the new Carrara glass, closely resembling white Italian marble, and but recently marketed by the Pittsburg Plate Glass Co., is exemplified in this building thoroughly. Principally it has been used for wainscot and in the rooms set apart for the private use of the firm's customers, and besides this in all lavatories. Its unusual beauty, cleanliness, durability and the economy in keeping it so are apparent at a single glance. In a few instances panels have been inlaid with glass mosaic, indicating splendidly its possibilities in a decorative way.

In the matter of fire risk careful attention has been given to the doors at hall landings, the same being constructed of the new fire-proof mineral material known as "Alignum." All windows facing adjacent property are fitted with clear plate wire glass, and are made entirely of metal with no wood or composition filling. They are fitted with weather strips, of metal also, excluding dust and draughts. These windows have never failed to exclude fire, and are known as one of the best insurance rate reducers on the market. Mississippi wire glass has been used in all windows save a few of the large plate glass windows of lower floors.

One or two of the upper floors are of the "mastic" asphalt type, made up of pieces of oak 2 inches by 12 inches, laid herring bone and glued with a very adhesive asphaltic liquid to the under-

flooring. It gives a floor of great durability and solidity, lasting a lifetime.

Experience has demonstrated that in buildings of this size an isolated light, heat and power plant is more economical than to take light and power current from the Edison street mains.

Features of the isolated plant installed here are that it will supply in addition to the usual demands, current for the firm's electric delivery wagons, power for the eight large ventilating Howard and Morse fans installed on each floor, power for the Frick ice plant supplying drinking water throughout the building, and power for the automatic interior parcel delivery system.

To prevent vibration noises from machinery the architects required the engines to be installed upon a deep set foundation covered top, sides and bottom by a one-foot thick sandcushion, which takes up and completely nullifies all vibration. The Ames type of engine has been used. Three have been installed, operating three generators. All are of the single cylinder, automatic cut off, high speed, direct connected type.

To insure efficient and safe delivery of valuable parcels to and from the various departments, the Architects selected a number of full automatic electric controlled dumbwaiters of the Elektron Mfg. Co. pattern. These carriers are operated instantaneously from each floor, by push buttons located in metal boxes, numbered corresponding to the different stopping places. By pressing a button corresponding to the number of floor desired, the car will immediately proceed to that floor and automatically stop. Doors cannot be opened nor cars interfered with while they are in motion. The system is automatic entirely and possesses every safeguard known in the latest and most scientific dumb-waiter construction.

That firms bearing the reputation of Tiffany & Company propose to throw around their patrons and employees every known safeguard is illustrated by the installation of six plunger passenger and one plunger freight elevator of the Standard Plunger Elevator type. It has been proven that these cars never fall, as they are carried on plungers or large steel rods running into the ground the same depth as the height of the run of the car. While their first cost is a trifle more than that of other types, their maintenance costs less and their life far exceeds any other known type.

Atlas Portland Cement was used in the construction. The Pneumatic Tubes were installed by the Lawson Consolidated Store Service Co. The electrical work was done by Johnston Livingston, Jr. & Co. The tiling was furnished and set by the W. H. Jackson Co. The metal lockers were made by the General Fireproofing Co.

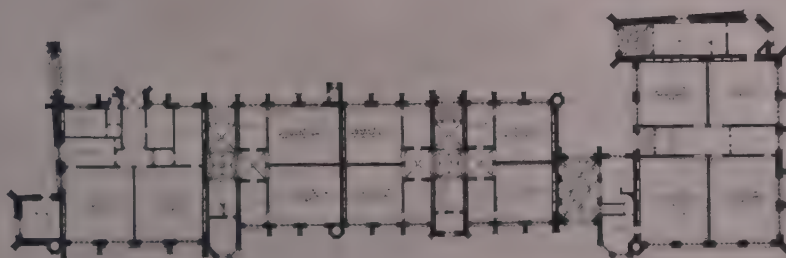
To an extent it has been the purpose of this article to illustrate to the profession and capital the need for buildings of this class and for the use in their construction of the highest skill and apparently costliest of materials. Adoption of such ideas and principles insure greatest credit to all concerned and largest return, in the long run, upon capital invested. In addition buildings so constructed make for progress, the adornment and enrichment of the cities and the health, happiness and safety of individuals. The question arises naturally, why should we build for a day, when richer rewards and credit may be obtained by erecting buildings that will last far into the centuries to come.

It is not only in the imitation of a style or the wrong treatment of material that we show our unreality and want of truth, but in numerous other things which lie at the fundamental basis of all good designs of every style.



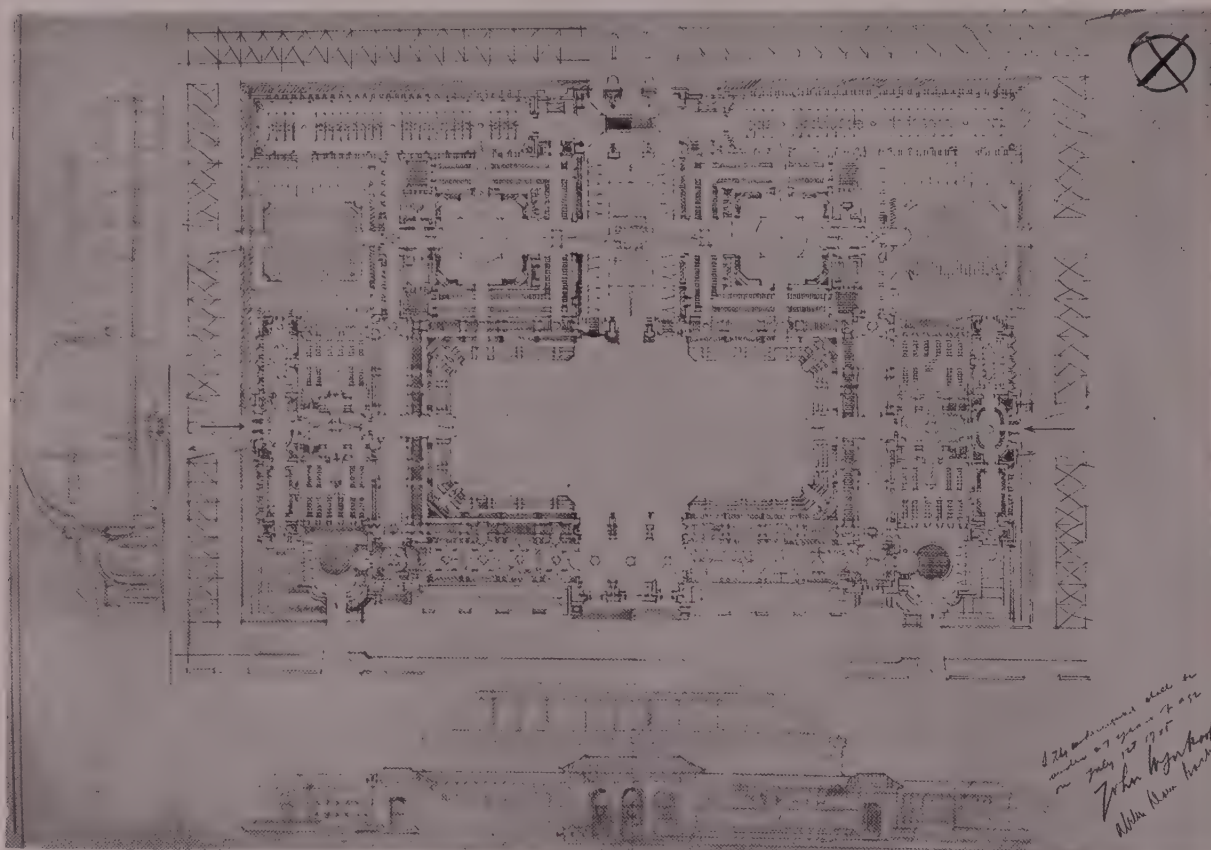
PLAN, COMPETITIVE DESIGN, MCCOSH HALL, PRINCETON.

Parish & Schroeder, Architects.



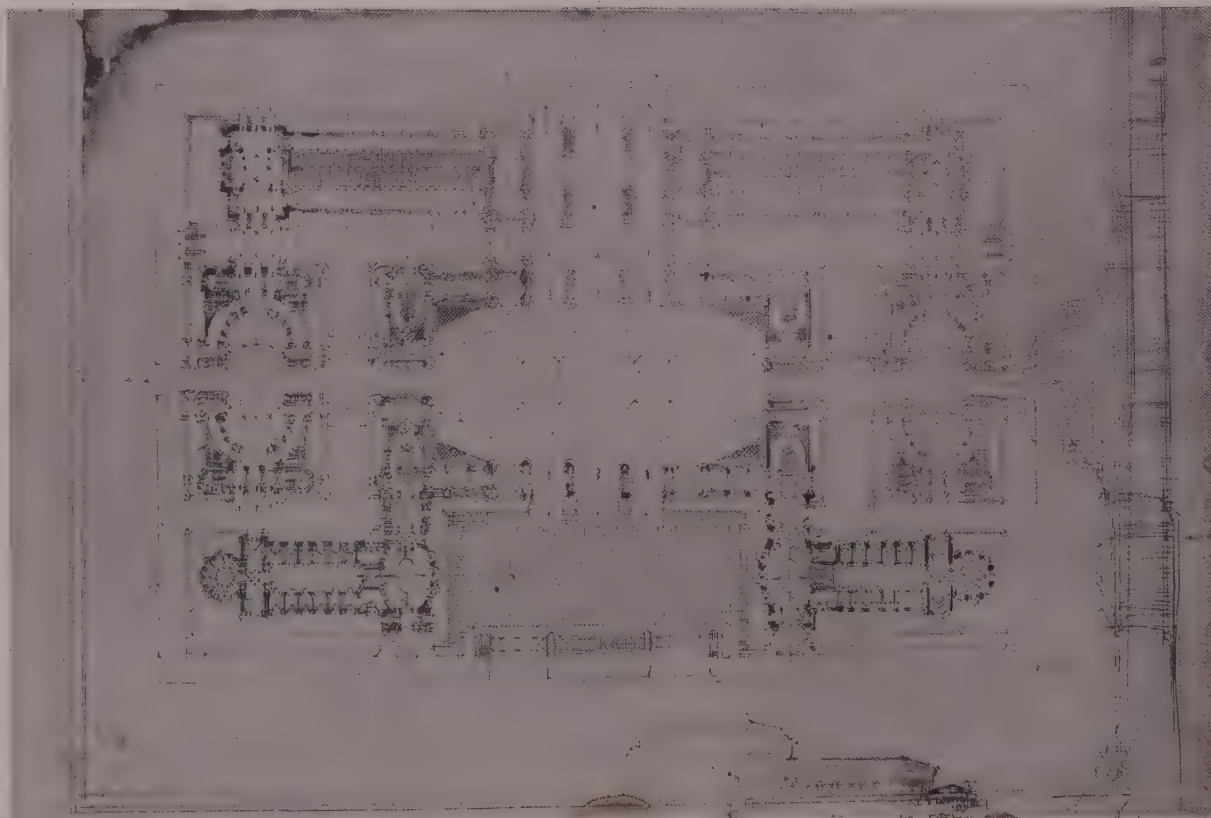
PLAN, ACCEPTED DESIGN, MCCOSH HALL, PRINCETON.

Raleigh C. Gildersleeve, Architect.



Placed I.

John Wynkoop, Atelier Donn Barber.



Placed II.

Walter de Mari, Atelier Hornbostel.

The Society of Beaux Arts Architects

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COMPETITION

for the
PARIS PRIZE
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SOCIETY OF BEAUX-ARTS ARCHITECTS.

2D PRELIMINARY EXERCISE.

A RIDING SCHOOL.

This establishment is supposed to be placed in the neighborhood of a park in the rich quarter of a large city. It will be surrounded by four streets. The plot will be presented in the form of a perfect rectangle of 350' x 500'.

The principal façade may be presented according to choice, upon the small or the large side of the rectangle.

Since this building is intended for riding, the principal hall or ring should be of sufficient size for the purpose of a horse show—certain feats of horsemanship, hurdle jumping, etc., etc. In a word, a small hippodrome.

The principal requirements are :

1. A large ring.
2. Two small rings.
3. Stables to accommodate two hundred horses.
4. Covered spaces for sixty carriages.
5. Reception Rooms, Lockers, Dressing Rooms.

REQUIREMENTS IN DETAIL.

1st. Access to the large ring or small hippodrome should be wide and ample. Its surface should not be less than 20,000 square feet, nor should it exceed 28,000 square feet. There may be one or several galleries, disposed "en balcon" or otherwise, to accommodate at least twelve or fifteen hundred persons. As an indication it may be stated that the rings in several American Riding Schools of importance are 100 feet in width.

2d. Two small rings for private lessons—one for men, the other for women, each to cover a surface of 2,000 square feet. They should connect with the principal ring.

3d. Stables in one or two stories, according to choice, for the accommodation of two hundred horses, with place for harness connecting. They may be disposed in a single building or in two buildings.

4th. Covered spaces : Whether a large hall, an arrangement of shelters, or special galleries to contain at least sixty carriages of all kinds. Certain carriages—coaches, for example—require more space than others. Stables and accommodations for carriages must be well connected, and both no less largely connected with the principal ring, in order to permit the utmost freedom of evolution for a coach or for a four-in-hand.

5th. Reception Rooms and Lockers. This portion, while not a club properly speaking, should nevertheless be treated to ac-

commodate a considerable number of the members. The school is supposed to comprise several hundred.

There will be two parts—one for men, the other for women—which may form a single building with distinct services, or two separate buildings, according to the choice of the competitors.

The surface required for each of these parts, for the Reception Rooms, Hall, place for about 150 Lockers and Dressing Rooms, will not be less than 10,000 square feet. It may even be more. This surface will be divided in several stories.

This or these buildings for Reception Rooms and Lockers should be connected with the different parts of the establishment, especially with the stables.

To these principle requirements will be added : Several rooms for offices of the Director and Veterinaries, Rooms for the Janitor, Stablemen, Lavatories, Store Room, etc.

The dimensions given for this composition do not permit large uncovered spaces. However, it would be desirable to dispose some open spaces, especially near the entrance or entrances, and to reserve some courts or "courettes" for service near the stables.

The sketch will be presented upon a sheet of double elephant.

REQUIRED.

The plan of the principal story, that is to say, the ground story. Scale $\frac{3}{8} = 1$. In the margin will be drawn the principal façade and the section to the same scale, $\frac{3}{8} = 1$.

No person who shall be more than 27 years of age on July 1, 1905, shall be eligible for the Paris Prize, and each drawing must bear the signature of the competitor, below the attestation, "I, the undersigned, shall be under 27 years of age on July 1, 1905."

This exercise shall open at 9 A. M. on Saturday, May 13th, and all drawings must be handed in before 9 A. M. on Sunday, May 14th.

No competitor shall be allowed to return to the draughting room after having once left it. No competitor shall be allowed to enter after midday.

LLOYD WARREN, Chairman.

S. B. P. TROWBRIDGE,

J. H. FREEDLANDER,

Committee on Education.

FIRST ideas are not always the best or the happiest. In architectural design—at least, where plan and contrivance form an important part of the work—second thoughts may be found the most deserving of adoption. It is otherwise when the conception is confined to composition, profile or elevation, as in such cases the first inspiration is often unimprovable. This thought should make it obvious to the architect that his work is of so complex a kind that it cannot be placed on the same footing as a picture or a piece of sculpture. It appeals to more than our outward senses that the more we consider the problem the more it grows upon us, or, in fact, that we can be continually improving and modifying our first idea which develops at every step. Very few of those who enter competitions have not experienced the insatiable desire, after their drawings have been sent in, of wishing to alter or remodel their plan. A fresh idea has entered the mind. How much simpler and better the new arrangement would be ! Such inspirations sometimes come in time to allow the competitor to submit an alternative scheme, which is generally a "second thought," and these are, as a rule, simpler, though not always convincing improvements. The history of architecture has indeed been a history of improvements in plan and design ; of repeated trials and experiments.

THE SCHOOLS OF ORNAMENT.*

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Greek.

Pericles, 470-49 B. C. Ictinus, Callicrates and Phidias on Parthenon 454-438, B. C.
Scopas, 430 B. C. Bryaxis, 372 B. C.



IN the best period of Greek ornament the characteristics are reserve, dignity and beauty of form and outline

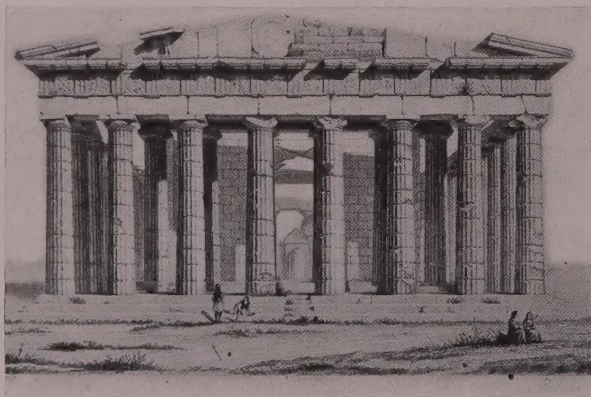
Professor Goodyear, in his Grammar of the lotus, has certainly made a strong argument for the origin of many of the Greek forms, in the lotus, which is itself one of the beautiful and inspiring flowers to a designer. The egg and dart developed in Mr. Owen Jones' and Professor Goodyear's illustrations from the reversal of lotus patterns, the meander, (which we know is common to the art of many people, even to the Aztecs and prehistoric people of the American Pueblos) the anthemion of the honeysuckle and palm, bay, laurel, ivy, etc., were all used by the Greeks, and are found in the greatest variety on their vases and architecture. This period of Greek art was the result of the eclecticism through centuries of a wonderfully gifted people, aided by the environment of beautiful landscape and temperate climate, so that though it is to the Greeks we owe most of our present civilization and its attendant advantages, they themselves were indebted to earlier races of some of whom perhaps they had heard little and knew less.



Finial from the Monument
of Lysicrates, Athens.

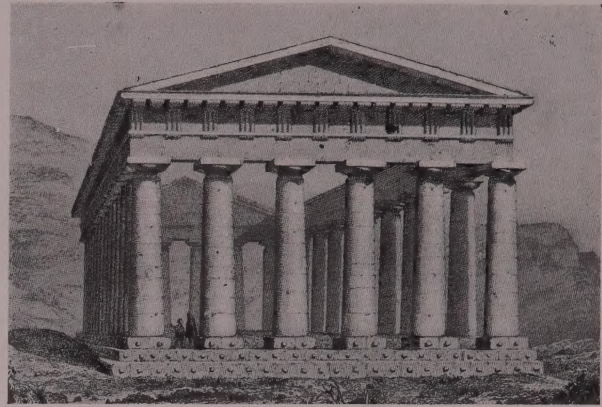
It is said now, and with strong show of reason, that the beginning of ornamental art was in the caves of Western Europe, where man of the paleolithic age first began to long for something beyond the practical utensils of life and ornamented his dagger and harpoon with flint point etchings. This cannot be disputed, and Greece was only giving back in a developed form through Italy and the Renaissance that which she had long borrowed through the migrations of unknown tribes.

Greek ornament above all teaches the value of restraint and conventionality, and yet when one has seen all that can easily be seen, the marvelous variety of design and the freedom from absolute stiffness



The Parthenon.

* A series of articles written by Mr. William Winthrop Kent, Architect, forming part of "A Treatise on Locks and Builders' Hardware," by Henry R. Towne, President of the Yale & Towne Mfg. Co., and Past President of the American Society of Mechanical Engineers. This book is profusely illustrated and contains more than 1100 pages, 4x6 1/2." John Wiley & Sons, Publishers. Price, \$3.00. It is the intention of the publishers of ARCHITECTURE to reprint one school in each number.



Temple of Segesta, Sicily.

and hardness is especially instructive. In their cast metal work we find the same beauty of form as in their pottery and carvings. Iron for ornamental forms was evidently not highly valued, for although its constructive use is proven in the stone buildings at Assos and elsewhere, its malleable qualities do not seem to have been decoratively employed, by the Greeks. The refinement of outline, the entasis of column and cornice, the value of pure color, and above all the appreciation of



Anthemion.



Anthemion.

the contrast between plain and ornamental surfaces are strong characteristics of Greek work. These are not exclusively Greek, but, although preceding art indicated a knowledge of the value of all these attributes, in Greek art they were most highly developed.

To the Greeks we owe the development of the use of color on architecture, a refinement of its use by the Egyptians and earlier races, and especially are we indebted to them for the last stages of most perfect system of conventionalization of forms from nature. I say the last stages because there is no question but that antecedent races began what the Greeks finished. The Swastika is the most ancient proof that conventionalization began with the first steps away from man's primitive state. The Greeks were heirs to all that came after, but heirs who so improved

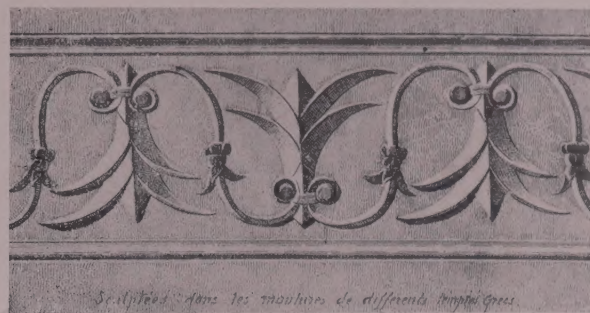


Palmettes.

their inheritance as to leave little chance for future improvement along the same lines. The world of design has not yet found a leaf more adaptable to general architectural ornament than the acanthus, and it is still used, in the Greek and later forms.



Acanthus Leaves.



Carving on Moulding from a Greek Temple.



Fret or Meander.



Acanthion Moulding, Eretheum.

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FAILURES OF CONSTRUCTION.

IN a paper read by Mr. F. Elliot Cabot, assistant secretary of the Boston Board of Fire Underwriters, before the Boston Society of Architects, certain failures of construction from the underwriter's view were discussed. Two types of building, the "mill" construction, and the so-called "fireproof" construction, were dealt with. Both kinds of construction have been put forward as possessing the qualities of fire-resistance in an eminent degree; but the writer says both of them have failed entirely to prevent the loss of property, "which is as truly a loss as if the money value represented by it had been thrown into the sea." The author goes on to refer to the causes of these failures, and with regard to the "mill construction," the error was first in the application of the system to work for which it was not intended; secondly, in a failure to carry out the principles on which the construction was based. The construction was an improvement upon the early type of building, with its fire-traps, concealed hollows in floors and walls, combustible roofs and passages; and it provided also improved fire-extinguishing apparatus, better lighting, heating, etc. Compared to the city building for the storage and sale of merchandise, the mill contains but little combustible contents, and is of small height; and when this improved type of structure was adopted for stores and warehouses no adequate provision was made for the changed conditions. Offices and counting-rooms were partitioned off with hard pine boarding; there was no room to inclose stairway and elevator shafts in separate brick towers, so they were put inside the main walls uninclosed, as the city lot did not admit of external brick inclosures. Here was a serious cause of failure and risk. Varnish instead of paint was used for the sale-rooms, as being more attractive. Then the crowding of city buildings renders the outside window openings a great danger, as fire so often spreads between buildings by this cause. The mill building is generally without protection by shutters, and is often occupied by different tenants—all sources of danger. In short, the attempt was made to use mill construction for warehouses and stores without keeping in mind its essential features, which were: no vertical openings, no concealed space, the minimum of combustible finish with ample facilities for extinguishing fire at its discovery, and protection from outside exposure. Hence the mill type of construction was found a failure for the city warehouse; it was a misadaptation. The old factory and warehouse of two or three stories suited fairly well the conditions of the age when they were built; there was fireproof arching resting on cast-iron girders for storage of goods; but when this plan was used for large city buildings of the warehouse type, it came to grief owing to the brittleness of cast-iron girders and columns, and the want of proper inclosed staircases.

Referring to "fireproof construction," the author alludes to the American tendency to go to extremes, and the construction of enormous buildings, limited only by the strength of materials as to height and by the area. The great expense of such erections has "led to economies which have proved dangerous, and to methods which fire has tried and found wanting." The U. S. Government Warehouse at Baltimore, after the awful conflagration of last year, is an example of the possibility of building a warehouse of reasonable size which, even under such a fire, would be a protection to the merchandise within its walls. But for the introduction of an elevator and the alterations necessary, the repairs would have been comparatively small—only the cost of glass for windows and a little paint. Buildings round it were totally wrecked, and it stands today in an original form, except in the destruction of the granite fac-

ing to the interior columns, which are of brick. Granite and marble, and, in short, all stone, though incombustible, are materials which speedily crack and calcine under the heat and expose the brick core. The Baltimore fire has proved the fact beyond doubt. In brief, one of the lessons that have been learned by that awful conflagration is the necessity of prohibiting the use of granite and stone for supporting the fronts of buildings, or for columns or supports, and the necessity of prohibiting the use of granite, marble and stone for stair-cases. The same fire has again emphasized the value of well-burned brick of good quality properly laid in cement mortar; also as the best fire-protective covering for steel or iron columns. In this connection we may point out that hollow terra cotta tile as generally used as a covering for columns is apt to break when exposed to heat. Yet, in face of the Baltimore warning, Mr. Cabot says there is not a large city in America in which marble or granite is not used in fireproof building, and in parts so high above the street that the use of water to protect them from fire will be physically impossible. The false economies are pointed out which so often confront the underwriter, who, from the business point of view, endeavors to fix a proper price for the indemnity he has for sale. One of these is the reduction of the protection for the steel framing which forms the skeleton. Thus it is pointed out that the records of the cost of the large official buildings destroyed in the Baltimore fire show that the marble wainscoting and flooring of the halls cost more than the protection of the steel frames, and in one building a form of floor construction which was proved to be good was given up for a cheaper system at a saving of 1 or 2 per cent. of the cost. These steel frames have to support enormous loads and to withstand great strains, and yet they are begrudged the small additional cost of protection against fire, while twice the money is spent in decoration. It is also stated that in some of these office buildings interior fire-resisting partitions are set on combustible wooden floors, and the result of any failure of the floor causes the destruction of twice the value in partitions and their finish. Again, iron face-plates are put on the fronts of these buildings, and the adjoining brickwork is allowed to rest on them, so that in a fire a slight expansion of the iron displaces many feet of brick facing. The unprotected window is a serious cause of complaint from the underwriter's point of view. Vertical openings also have been the cause of the destruction by fire of numerous buildings of this class, as they act as a flue. These so-called "economies" of building are, we fear, the rule rather than the exception. Mr. Cabot briefly alludes to the insurance engineer's hope of what may be done to meet these difficulties. With regard to the "mill" form of construction, he thinks the automatic sprinkler, the fire-door and fire-shutter, with a restricted use of combustible finish, will greatly solve the difficulty. The smooth or panelled ceiling is best for the sprinkler. As to "fireproof" buildings, the author advocates the use of "wire-glass" in metal frames for exterior use and to light stair and elevator well. Close the vertical openings, protect the steel frames everywhere, and protect exposed windows. The conclusions of the special committee of the National Fire Protection Association, drawn up after the Baltimore fire, on the question of vertical openings for stairs and elevators, are to the effect that they rapidly communicate fire to all stories. All floor openings "should be inclosed in brick-walled shafts crowned by a thin glass skylight and extended through roof, and with fire-doors at openings to stories. Uninclosed vertical openings are considered to be a most prominent feature contributing to the fire cost and loss of life. Neglect to guard these openings is common throughout the country. Steps should be taken to rectify this condition in all existing buildings."